

Theater Forecast Unit Forecast Review

Date: 7 DECEMBER 1972

Season: WINTER

Forecaster: C. Purdy

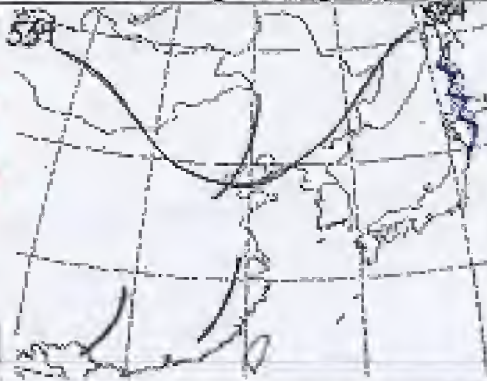
Reason for review: Thunderstorm that occurred over (50) (50) at 1400L (07Z)

Synoptic Situation

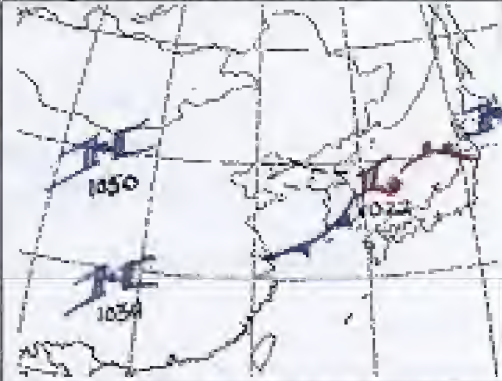
Include heights/pressures, isotherms, troughs, ridges, pressure/height centers and values



300 MB :07100Z



500 MB :07100Z



Surface :07100Z

Initial Forecast Reasoning: Longwave trough located Manchuria, extending down over the Gulf of Pehai. Warm branch of PT located over C.M. Mongolia moving over the Shanghai Pen along the 20E. Even the NW Pen and running over the Russian Far East. Even branch of 1st amplitude had deepened 2mb past 12 hours and after Post analysis, it had deepened 1". Soomb ridge slowly had located at approx 119E - 45-40"N (Manchuria, Korea, Gulf of Pehai) supporting unstable wave (1022mb) 2° East of Cent Sea. System had deepened 6mb past 2hrs, as it moved into the base of the Longwave trough. Moist air supported this with 5-10' ceiling clouds over the warm sector of baroclinic zone. Surface wave moving E-NE at 15kts (30kts at 20mb) with cold frontal boundary moving S-SE at 10-15kts. Post 12hrs surface had slowed 10kts due to increase in cyclogenesis. 07100Z SFC wave did pick-up on a post-frontal trough (COW) along the NW edge of the Rck. Nobar's model also pick-up on low-level circulation of post-frontal trough but was positioned 10° on trough of enhanced clouds over the west sea. A West Lake Barokel High was located over the Gobi Desert (1050mb) and had built 2mb. The post 07100Z system was moving S-SE following the strongest COW. At 071000 -20 isotherm was at approx 14000 ft. by 07100 had dropped to 14000 ft. This coincided with frontal passage at initial onset of COW. After frontal passage, obs. from across the Rck showed 3. Gradual cooling of temps and an increase in altimeter & barometric pressure resulting in an increasing or a stabilizing atmosphere. Thus initially, forecast was the onset of cold air outflow with little to no expected development.

Other models: MHS did not pick-up on TSURUS however did show precip.

Post Analysis

ON BACK →

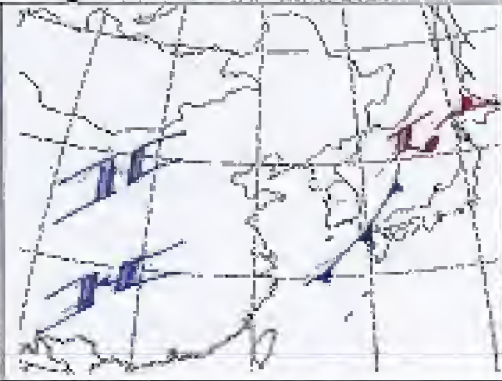
Include heights/pressures, isotherms, troughs, ridges, pressure/height centers and values



300 MB :07112Z



500 MB :07112Z



Surface :07112Z

KUNSAN (NNA) MHS for DEC 7 00Z

- indicated clouds up to 9000ft MSL
- 3 hr precip totals ranging from -.01 to -.03 for @ 30 hr pd.
- NW SFC winds switching NE at 05/00Z

- KUNSAN (AFW) NKF METCASTING

only significance was initial 7 Dec

precip showed "snowshowers" as opposed to snow.

at 07/0742 RJIL first reported TSHA. at 07/0721 RKSC first reported TSHA.

Initialization of Models (NOGAPS (NKF) found no major discrepancies.

300mb. Jet Placements of NNA & SYN branch did very well. NNA branch division south of the Shantung Pen over the DMZ. SYN branch over ERN China so. of Korea and was having no effect to weather over the Pen.

500mb. Placement of NNA over Shantung Pen stacking down to SFC Low over East Sea was good as well as amplitude when compared to VA.

700mb. Moisture cuts overdone when compared to SAT over Pen, but this feature is not uncommon with NOGAPS.

SFC. SFC Low on both NKF + NOGAPS compared well with 00Z SFC anal.

when comparing 07/00 + 07/06Z SKEW-T (RKSC) sounding of OSAW showed that the -20 isotherm had lowered 400ft from 100ft to 120ft. overall SKEW-T showed only minor destabilization of the atmosphere

Short-Range forecaster + Met-Watch believed that a Thunderstorms advisory was warranted due to the weak instability present.

Initial interpretation of the SKEW-T showed little to no significant increase in the lapse rates or destabilization, thus no advisory was sent.

Post Analysis Reasoning:

Most Thunderstorms over Korea are the Air Mass TYPE (summer). However, other effects can aid in the formation of TSTMS, such as. OROGRAPHIC, cold core, and with a frontal boundary helping lift the warmer, moist less dense air.

In this case, in analyzing the data, the Net-Watch misinterpreted the location of the -20 isotherm. [Initially thought -20 was at 220ft+] after initial interrogation of Doppler radar had build-ups 110-120ft.

Re-analyzing data and SKEW-T believe the minimal conditions for TSTMS were ^{not} met. When reviewing stability indices at 24LNMEE.

Indices needed for good Thunderstorm development

			07/0000Z	07/0600Z
CT (cross Totals)		20	CT	-9.4
VT (vertical Totals)	LESS THAN 28	≥ 26	VT	23.6
TT (Total Totals)	EXPECT NO TSTM	44-48	TT	14.2
SSI (Shower Index)		3 to 1	SSI	14.4
LI (Lifted Index)		0 to -2	LI	11.8
TI (Thompson Index)	LESS THAN 20 NONE	20-29 weak	TI	-27.4
KI (K.I %)			KI	-15.4
KO (Likelihood of TSTM)			KO	12.8
WBZ		5,000 to 11,000 weak	WBZ	1200ft

Lessons Learned:

Lessons Learned from this event warrants a more vigilant Net Watch as well as attention to detail.

In addition, although uncommon in Korea, winter thunderstorms are possible. The importance of a good initial interrogation of synoptic situation is a must! as well as the importance of the -20° isotherm being a good tool for Thunderstorm Top Threshold.

Team Chief:

Superintendent:

IM:

BOTTOM LINE ON THIS REVIEW IS THAT ALTHOUGH THE INDICES DIDN'T INDICATE ANYTHING OTHER THAN STABLE CONDITIONS AFTER F-08P, THE POST COLD FRONTAL TCF WAS MISSED (TRIGGER) AND A FORECAST SOUNDING WAS NOT ACCOMPLISHED